

AMENDED CLAIMS

received by the International Bureau on 25 February 2005 (25.02.2005);
claims 1 to 11, 15 to 16, 18 to 25 unchanged ; Claims 12 to 14 and 17 cancelled.

WHAT IS CLAIMED IS:

1. A two-dimensional optical scanning apparatus comprising:
a rotating body; and
at least two linear light sources units disposed on a surface of the rotating
5 body, comprising a plurality of lighting elements that are arranged in a row to emit red, green, and blue light that are modulated according to an image to be displayed.
2. The two-dimensional optical scanning apparatus as recited in claim 1, wherein the rotating body is in a shape of a cylindrical drum.
3. The two-dimensional optical scanning apparatus as recited in claim 2,
10 wherein when the number of linear light source units is n , each linear light source unit is disposed at an angle of $360^\circ/n$ with respect to an adjacent unit on the surface of the rotating body.
4. A two-dimensional optical scanning apparatus comprising:
a moving body that rotates endlessly; and
15 at least two linear light sources units disposed on the moving body, comprising a plurality of lighting elements that are arranged in a row to emit red, green, and blue light that are modulated according to an image to be displayed.
5. The two-dimensional optical scanning apparatus as recited in claim 4, wherein the moving body comprises:
20 at least two cylindrical drums; and
an endless belt or chain that is connected between the drums.
6. The two-dimensional optical scanning apparatus as recited in claim 5, wherein when the number of linear light source units is n and a length of the chain or belt is s , each linear light source unit is disposed at a distance s/n with respect to an
25 adjacent unit on the belt or chain.
7. The two-dimensional optical scanning apparatus as recited in claim 4, wherein the apparatus has a linear section where the linear light source unit on the moving body is in rectilinear motion.
8. The two-dimensional optical scanning apparatus as recited in claim 1,
30 wherein the linear light source unit is substantially parallel with a rotating axis of the rotating body.
9. The two-dimensional optical scanning apparatus as recited in claim 4,

wherein the linear light source is substantially perpendicular to a moving direction of the moving body.

10. The two-dimensional optical scanning apparatus as recited in claim 1, further comprising a collimator lens for converting light from each lighting element of the light source unit into a substantially collimated light beam or a converging optical element for converting light from each lighting element into a converging light beam.

11. The two-dimensional optical scanning apparatus as recited in claim 4, further comprising a collimator lens for converting light from each lighting element of the light source unit into a substantially collimated light beam or a converging optical element for converting light from each lighting element into a converging light beam.

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. The two-dimensional optical scanning apparatus as recited in claim 4, wherein each lighting element comprises a light emitting diode chip and an epoxy cast, the epoxy cast having a spherical or aspherical light emitting surface to function as a lens.

16. The two-dimensional optical scanning apparatus as recited in claim 1, wherein each lighting element is a light emitting diode of a surface emitter type, of which surfaces are coated by a metal film except for a predetermined area.

17. (Canceled)

18. The two-dimensional optical scanning apparatus as recited in claim 1, wherein when a maximum scanning angle θ_{\max} of the scanning unit is divided into a predetermined resolution, a time interval Δt during which the linear light source unit emits light between an i -th scanning angle θ_i and an $(i+1)$ -th scanning angle θ_{i+1} , satisfies the following conditions:

$$\tan \theta_{\max} = k(\tan \theta_i - \tan \theta_{i+1}) \text{ and}$$

$$\Delta t = (\theta_i - \theta_{i+1})/2\omega,$$

where $(2k+1)$ is a maximum line number of pixels;

30 θ_{i+1} is a scanning angle of an $(i+1)$ -th line; and

ω is an angular velocity of the scanning unit.

19. The two-dimensional optical scanning apparatus as recited in claim 4,

wherein when a maximum scanning angle θ_{\max} of the scanning unit is divided into a predetermined resolution, a time interval Δt during which the linear light source unit emits light between an i -th scanning angle θ_i and an $(i+1)$ -th scanning angle θ_{i+1} satisfies the following conditions:

$$\tan \theta_{\max} = k(\tan \theta_i - \tan \theta_{i+1}) \text{ and}$$

$$\Delta t = (\theta_i - \theta_{i+1}) / 2\omega,$$

where $(2k+1)$ is a maximum line number of pixels;

θ_{i+1} is a scanning angle of an $(i+1)$ -th line; and

ω is an angular velocity of the scanning unit.

- 10 20. An image display apparatus comprising:
a rotating body;
at least two linear light source units disposed on a surface of the rotating body, comprising a plurality of lighting elements that are arranged in a row to emit red, green, and blue light that are modulated according to an image to be displayed;
15 and
at least one screen on which the scanned light beam is projected.
21. An image display apparatus comprising:
a moving body that rotates endlessly;
at least two linear light sources units disposed on the moving body,
20 comprising a plurality of lighting elements that are arranged in a row to emit red, green, and blue light that are modulated according to an image to be displayed; and
at least one screen on which the scanned light beam is projected.
22. The image display apparatus as recited in claim 21, wherein the moving body comprises:
25 at least two cylindrical drums; and
an endless belt or chain that is connected between the drums.
23. The image display apparatus as recited in claim 21, wherein the apparatus has a linear section where the linear light source unit on the moving body is in rectilinear motion.
- 30 24. The image display apparatus as recited in claim 20, wherein the number of screens is two or more, and each screen is displaced in a different direction from each other.

25. The image display apparatus as recited in claim 21, wherein the number of screens is two or more, and each screen is arranged in a different direction from each other.